Hobbies WEEKLY

CONTENTS

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How to make a

FOLDING BOX KITE

MOST readers like to enjoy the sport of flying a kite, so why not make one yourself? The varieties of kite design are numerous, from the simple diamond pattern every chap knows, to the complicated man-lifting design. A good all-round pattern is that known as the box kite, so this is now to be dealt with. A picture of it is given here in use.

A side and end elevation of the kite are shown at Fig. 1, with some suitable dimensions. For the sticks a piece of straight grained deal will be suitable. From this saw and plane four, measuring 3ft. long each and of $\frac{3}{8}$in. square section.

Suitable Material

Take care by careful selection that no knots or stakes are present in the wood before cutting. When sawn and planed, rub lightly over with fine glasspaper to smooth the sharp corner angles.

For the stretchers, which keep the kite in shape and the material taut, cut four pieces of $\frac{1}{8}$in. wood, to $\frac{3}{8}$in. width and 1ft. 9ins. long, as at (A) in Fig. 2. Any thin tough wood will serve for making these, the tougher the better, as they have to stand some strain.

Fitting in Pairs

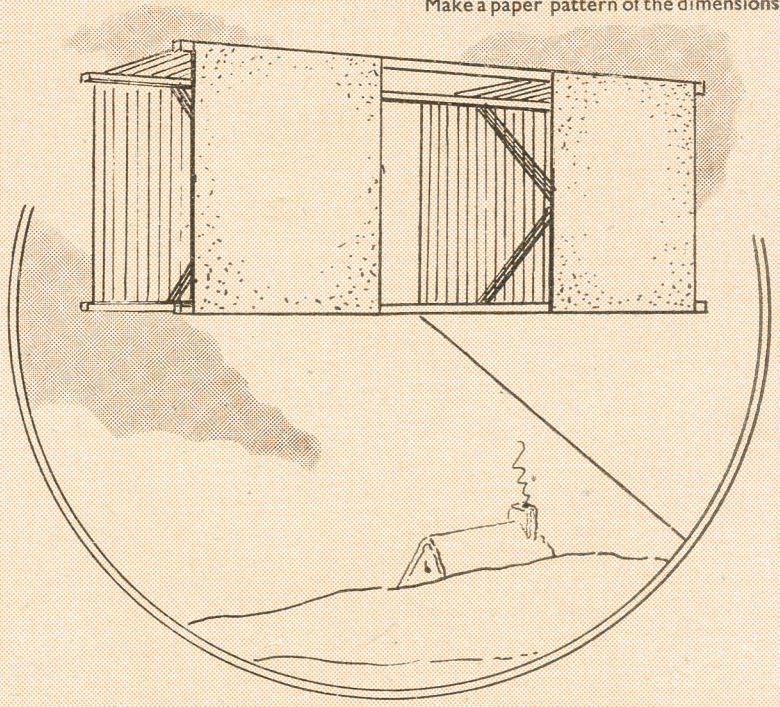
These are fixed together in pairs, with a single round-headed screw at their centres, as at (C). The screws should be tightened sufficiently for the stretchers to open out and close rather stiffly. As these will have to fit up against the long sticks, cut a right-angled notch in the ends of each, as at (B).

The sticks must now be well secured to the stretchers with glue and a single fine fretwork nail, at a distance from each end of $6\frac{1}{2}$ins., so that they will extend the sticks at the centres of the material bands, which act as the planes, by which the kite can fly. By this arrangement the framework can close up for ease of transport. Mind the stretchers are firmly fixed to the sticks, or the strain of a strong wind may cause a breakage.

For the bands at each end it will be wisest to choose a fine but strong material, instead of paper, as usually used for the cheaper article. There is ample choice nowadays in material but, perhaps, a piece of parachute silk or cotton would serve as well, if not better than most.

Paper Patterns

Make a paper pattern of the dimensions



given in Fig. 4 (D), from some stiff brown or cartridge paper, pin this to the material (doubled for two to be cut at once) and cut out carefully.

A ¼in. of each long side is folded over and stitched for a hem, then the stuff, hemmed side outwards, is drawn over the sticks and the ends pinned together, as shown in detail at Fig. 3. The stretchers should not be quite opened out, as they will be when the kite is ready for flying, but just a little more than halfway. Then, when fully out, the material bands will be stretched taut, as they should be. Remove the bands, and sew the ends together on the line of the pins.

Cut off any surplus material to ¼in. from the sewn line, double this over and sew a second time through the doubled hem and covering as well. The detail (E) in Fig. 4, will explain this. It may not be necessary to add, perhaps, but if a lady friend is able to stitch it with a machine, some tedious work can be avoided. Few fellows care much about the feminine job of sewing.

Now turn the material for the hems to be inside the bands, and replace on the sticks, the bands being positioned at 1in from each end. The stretchers should then be approximately in the centres of the bands. If the sticks are now opened out the bands should be rendered taut.

Fixed Bands

Fix these bands to two of the sticks with tapes. The position of these, or some of them, is shown in Fig. 3. Sew one each side of the stretchers, where it joins its stick, wrapping the tape round the stick and sewing it to the material, as at (*a*).

A similar attachment is also made at (*b*), diagonally from (*a*). No other fixing is made to the other corners, as when the framework is going to be shut up, well *it* won't.

For carrying purposes the kite can now be folded, the surplus material, caused by the folding, being neatly tucked inside. A bridle line can be made with strong twine, tied across to the lower pair of sticks, the string being attached to this line in the place found to be best by experience. A good quality kite line, which can be bought at most toyshops is safest to use for flying.

Paper Substitute

If the reader prefers to use paper instead of material for the bands, almost any kind can be employed if thin and tough enough. That quality known as bank paper is about the best, and if two different colours are used, a better effect is obtained so far as appearance is concerned, than one colour for both.

Paper, however, is more liable to tear than material, and it should be strengthened to stand up better to the strain induced when the stretchers are open. The edges should be pasted over, and in the hems a strong thread should be inserted, before pasting, of course, to add some additional strength to the paper at the places where it is most likely to fracture.

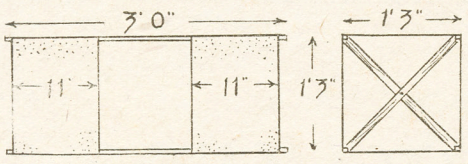


Fig. 1—A side and end elevation of the kite

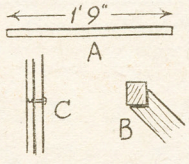


Fig. 2 — Stretcher detail

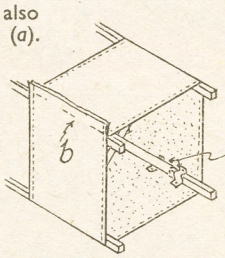


Fig. 3—Fitting the sticks

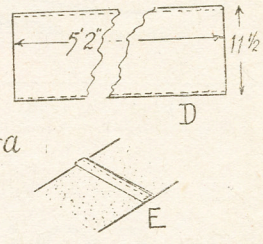


Fig. 4—Details of covering

CYCLE CAMPING HINTS—

CYCLE camping is a popular form of holidaymaking with young folk. Again this year hundreds of enthusiasts will go forth equipped with tents and enjoy all the benefits of living and sleeping out-of-doors. This form of camping affords a delightful week-end break from more conventional ways, and, provided the sun smiles benignantly, nothing pleasanter can be desired.

Hints to Remember

Much has been written on the subject, but there is room for further remarks, and a few hints here on what to do with your machine when in camp may not come amiss.

After arriving at the camp site and having decided to make a stay of a few days on the spot, do you just lay your bicycle on the turf, to collect damp and rust, and, maybe, to be tripped over by someone, who might possibly put his foot through the spokes of a wheel? Or do you prop it against the hedge, where the tyres are likely to collect thorns? Well, it is not unusual to see cycles treated that way, instead of being properly 'parked'.

Use a Guy-line

It is an easy matter to take due care of the cycle in camp. If a solo camper, then you may use a guy-line to hold up your machine, and this is far better than dumping it on the grass.

When you arrive on the site it is a wise plan first to secure your machine in an upright position. This may be accomplished by a simple contrivance. An S hook tied in the centre of a length of rope or strong cord about 12ft. long, with a peg fastened securely at each end, is all you require.

Fasten the hook under the saddle, then knock one peg into the ground with your free hand. Paying out line you then peg down the other side. The machine is thus securely guyed, and should stand firm either with a load or without. Be sure the pegs are thrust in the ground properly, as you do with an ordinary tent peg.

Sharing the Load

If you have a chum, then the two machines, after being unloaded on arrival, can be neatly 'stacked' by placing the saddles together, leaning the cycles against each other. Turn the front wheel outwards until the machines are firm and well-balanced. An old groundsheet or piece of canvas will protect them from dew at night or rain.

A small party of campers may house their cycles under a fly-sheet. This extra sheet with poles and guys adds little additional weight to the camp outfit and when three or four share the dunnage among them, it is no drawback. Say, four friends are on tour with tent and baggage, etc., this should be made up into parcels and distributed as evenly as possible among them. In such a case an extra fly-sheet is worth while carrying, for it will afford a good shelter for the machines.

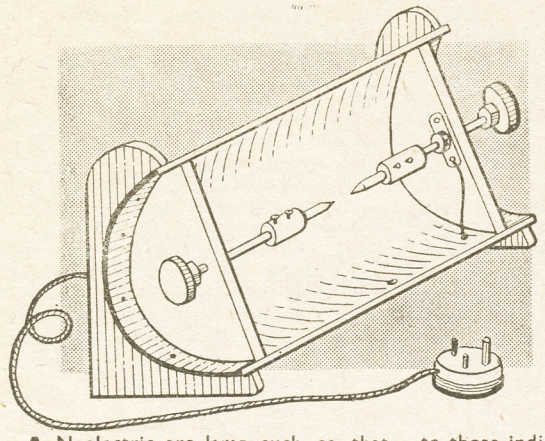
Fly sheet Shelter

It is quickly erected on its two poles and should be well guyed, especially if a strong wind is blowing. The cycles are 'stacked' beneath it, and are well protected, whilst you are in camp. In a permanent camp a rack can be made from suitable timber, to hold the machines. Then anyone needing his cycle to run down to the nearest shop or elsewhere, can easily take it out without disturbing the other machines.

The easiest way of storing cycles, of course, is where the camp site is attached to a farm or country inn, with a spare outhouse, stable or shed available. If such an outhouse can be locked at night, before you all turn in, all the better. At the Youth Hostels accommodation is usually provided for members' bicycles.

Remember, it is unwise to leave a bicycle exposed to rain and dew night after night. If there has been rain—or just a passing shower—on your journey up to camp, give the machine a rub down as soon as you can. By taking care of your 'steed' you will find it will wear longer, and keep its good appearance.

Provide your own sun-ray treatment with a home-made
ELECTRIC ARC LAMP



AN electric arc lamp such as that shown is generally used for artificial sun-ray treatment. When operating, it produces a brilliant hot, white flame rich in ultra-violet and similar radiations. It gives a very vivid light, but this aspect is not of much practical utility, though similar to the cinema-projector arc-lamps most frequently seen in apparatus of the older type.

Practical Details

A front view of the lamp is shown in Fig. 1. The source of supply is connected to the screwed rods, to which the carbon rods are fixed. Insulated knobs provide a means of adjusting the distance between the points where the arc is struck. The whole is supported in a curved metal reflector, this being earthed to the mains plug, as with electric irons and similar apparatus, to avoid danger of shocks.

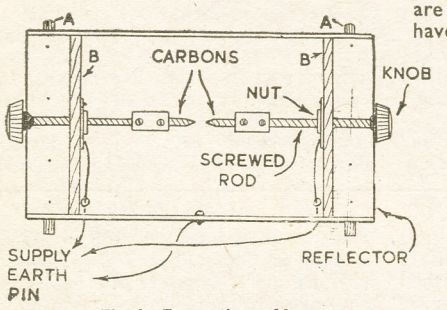


Fig. 1—Front view of lamp

For the carbons, it is possible to use the rods which will be found in exhausted dry batteries such as those used in torches and hand-lamps. These can easily be filed to a point at one end, using a fairly coarse file. During a period of use, the carbons will be burned away, thus increasing the gap, and this is compensated for by adjusting the knobs to bring the points closer together again.

The reflector is made from a sheet of thin polished aluminium 10ins. by 12ins. The correct curve can easily be obtained by bending the metal round a large tin-can, or some similar object.

A piece of $\frac{1}{8}$in. thick wood 6ins. by 6ins. is now taken and a circle about $3\frac{1}{4}$ins. in diameter drawn in the exact centre. The wood is then sawn diagonally, thus forming two triangular pieces. The corners are then rounded and the semicircles sawn out with a thin pad saw, leaving two pieces similar to those indicated in Fig. 2. (Here, the difference in diameter of the circular portions has been exaggerated to show how the aluminium sheet fits between).

The two outside portions, indicated by (A) in Figs. 1 and 2, are now screwed in position round the back of the reflector, forming the stand upon which the completed lamp will rest.

The smaller semicircular pieces are now screwed in place, the screws passing from the back, this time. These pieces are shown at (B) and will have to be a little farther from the reflector edges than pieces (A).

Holes should be drilled in the aluminium sheet for the screws to pass, and about four screws should be used to each piece. The reflector will then be held in correct shape.

Screw Adjustment

Two lengths of 2 B.A. screwed rod are used, passing through nuts which have been soldered to a small metal strip, as illustrated in Fig. 3. These metal strips are screwed on the inside of pieces (B) as shown. From each strip one of the supply leads is taken, loops being formed at the ends of the wires so that they can be held under a washer placed on the lower securing screws.

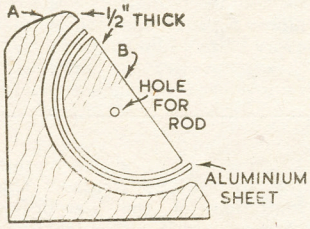


Fig. 2—How reflector is made

A fairly large insulated ebonite knob is screwed to the outer ends of the rods. Good quality radio receiver type knobs can be used. Wooden or other makeshift knobs are not recommended, as it will be seen that the mains supply is taken to the rods.

Bushes with set screws hold the carbons in position, as shown in Fig. 3. These bushes, with $\frac{1}{4}$in. diameter centre hole, can easily be bought and torch-lamp carbons will fit them well.

The rods should screw in and out smoothly and accurately, the points of the carbons coming into actual contact when the rods are screwed right in. If the nuts are a loose fit and the rods wobble, a fairly strong compression spring should be placed between each bush and the nut.

Wiring Up

Stout flex should be used and one lead is taken from a bolt passing through the reflector to the earth pin on the mains supply plug. If this lead cannot be arranged due to the presence of old-type two-pin power points, the reflector should not be touched while the lamp is plugged into the mains.

The leads which pass down from the strips should be of well-insulated flex and rubber grommets may be inserted in the holes in the reflector. If insulation is frayed through so that the bared wire touches the reflector, shocks may be felt when handling the latter if no earthing wire is used. If both leads fray, the lamp will be shorted and good quality material is, therefore, essential.

Limiting Resistance

If the carbons are at all close together the current flowing will be very heavy and the power-point house fuse will blow. To avoid this, a resistance is wired in series with one of the leads to the carbons, being of such a value that even when the latter are completely short-circuited the current flowing does not exceed the power-point maximum (normally 15 amps.).

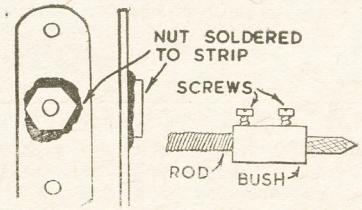


Fig. 3—Screw arrangement and holders

The easiest method to provide for this resistance is to wire an adapter in one of the leads. The limiting element can then be wired to a plug which can be inserted in this adapter.

For the resistance, an ordinary 3,000 watt electric fire can be used, and if the adapter mentioned is of suitable type it will only be necessary to insert the plug connected to the fire into the adapter. Lamps or fires of less wattage

(*Continued foot of page* 148)

Your seaside visits will be more interesting by undertaking

SEAWEED COLLECTING

WHY not you start a seaweed collection this year? It is a most fascinating hobby and you will be amazed at the different varieties you can find just at the high and low tide marks and in the little rock pools. For the actual gathering of the weeds, all you need are a good knife, a stick with a handle (to hook some of the bigger specimens towards you) and a bucket or jar.

Be sure to wear rubber plimsolls, too, for some of the rocks are rough and tear your feet. And do not forget to cover the back of your neck, for bending over and peering into the pools will mean that the sun is beating straight on to your head and shoulders.

There are four distinct groups of seaweed into which specimens may be divided which are recognisable by their colourings. They are blue-green, pure green, olive-brown and red. The first two groups like shallow water, the olive-brown prefers to be a little deeper and the fourth group chooses the very deep sea. There are, of course, exceptions but that is the general rule.

The coarser and bigger weeds become detached and are brought in by the sea and abandoned at the high or low water marks. For the lovely fine delicate weeds you must search the pools. Much of the seaweed which, in the water, looks dull and unattractive, is beautiful when mounted. The tiny weeds should be popped into the jar of water immediately you gather them from the pool. The bigger, coarser weeds may be dried in the air if you are not going to mount them at once.

Actually, collecting seaweeds need not necessarily be confined to the sea! There are many of the green weeds, mainly like tiny threads, nets or webs, in fresh water, too, and these will add real beauty to your collection.

The red and the brown seaweeds, however, belong exclusively to the sea. The former are very light and delicate and often almost transparent, exquisitely shaped like ferns or moss or even sometimes like coral. The olive-brown are nearly always large and coarse and in some foreign seas are almost like floating trees.

When you have finished searching (it is better not to collect too many at a time), and return home, your small seaweeds in the jar should be tipped gently into a bowl of sea water. Fresh water is no use for the small seaweeds, as they would start decomposing almost at once. The bowl should preferably be white, as your plants will be much clearer to you. When you have very gently shaken them around in the water they should be transferred to another bowl of sea water that has been filtered through muslin.

Now for the actual mounting. Cartridge paper is the most suitable for this. Place a sheet over a piece of thin wood or zinc which has already been punctured with holes for the water to drain through. Submerge this under the water and edge the weed gently on to it with an ordinary paint brush and arrange it in a suitable position for mounting while it is still under the water. Lift it out of the bowl and allow to drain off.

Next thing to do is slip the cartridge paper and specimen off the wood on to a piece of muslin that has previously been laid over several sheets of blotting paper.

Mop off any surplus blobs of water that are still clinging to the cartridge paper with a sponge and place another piece of muslin right over the specimen, then several sheets of blotting paper and lastly three or four large heavy books. The latter must be placed carefully so that the specimens are not damaged.

After two or three hours the blotting paper should be replaced with new sheets but the muslin must not be touched. Then replace the books and leave for another 12 hours. Again change the blotting paper and repeat the process every 12 to 14 hours for four days.

Now at last the material may be removed and the specimen transferred to a new dry sheet of cartridge paper and, if necessary, again pressed.

The specimens will probably stick to the paper on their own, but if they do not do so, there is a very simple way of making them. Boil a little milk and remove the skin. Moisten the cartridge paper with the boiled milk and place the speciman on top. You will find the seaweed will stick quite firmly after you have pressed it again for a little while.

We have been referring to the small delicate seaweeds but for the thicker variety you must make a slight alteration in the method of washing. They should be cleaned in fresh water to remove the salt and then dried between towels before being pressed in the same manner as the delicate ones.

As has been said before, the thick coarse seaweeds may be dried in the air if it is not convenient to mount them immediately. In this case, however, when you are ready to mount them, they should be soaked in boiling water for 20 minutes, then washed in fresh water and pressed in the same way.

The sticky seaweeds, after being washed and arranged on the paper, should be left to dry before being pressed, otherwise they will stick to the material and be torn and broken when you try to disentangle them.

Naming the specimens is no easy matter. In any case, if you knew the names you would probably not be able to spell them! The best method, perhaps, is just to divide your specimens into the blue, green, olive-brown and red groups. During the summer, at least, collecting seaweeds will keep you too busy to worry about their names.

Then, during the winter, you can spend the long, dark evenings searching out the scientific names of the specimens you have collected during the long summer days. There is a number of illustrated books on the subject, which you can probably borrow from the local library, and will help you to identify your specimens. (161)

Arc Lamp—(*Continued from page 147*)

can, of course, be used, but each reduction in the current flowing will cause a corresponding reduction in the strength of the arc.

How to Operate the Lamp

In view of the extremely vivid, hard light produced the arc must not be watched with the naked eye. Dark 'sun-ray treatment' glasses can be obtained, or some other form of effective shade may be devised.

Set the carbons about $\frac{1}{2}$in. apart and connect up as described. Lighting circuit points should not be used unless the current is to be confined to a maximum of 5 amps. (e.g., approximately 1,000 watts).

Upon slowly screwing the carbons together a point will be reached where the arc will be struck. This causes ionization of the air between the carbons, with a consequent reduction in electrical resistance, so that the carbons can be screwed apart to some extent without the arc collapsing. In view of the possibility of the arc ceasing, when of any length, during the periods when the direction of current changes in A.C. supplies, direct-current is preferable.

At the beginning, when the arc is small, there will be a heavy current across it, but little voltage drop, and the fire resistance will heat up. With a longer arcing distance between the carbons, however, the current will drop and the fire drop in turn to a lower temperature.

As with all mains-operated equipment, no bare parts should be touched when the apparatus is connected to the mains. It is advisable to adjust one knob only, using one hand at a time, to avoid any shocks which might be felt should both knobs be held simultaneously and the insulation be of poor quality.

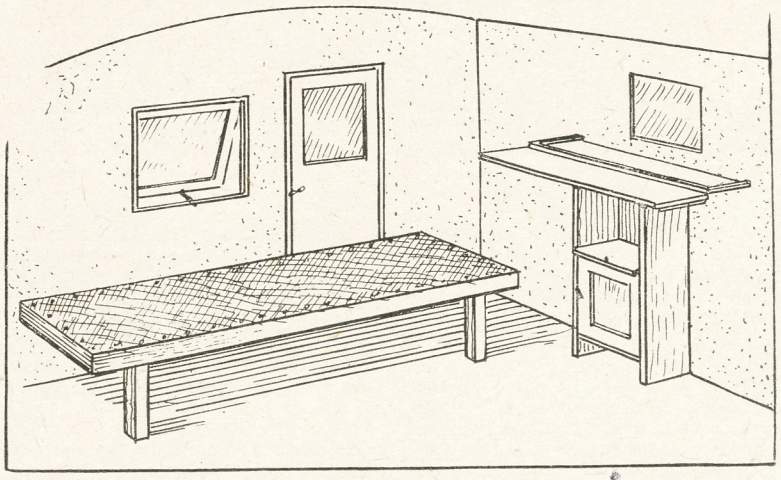
Actually, if the user is standing on a carpet insulating him from earth, no shocks are likely to be felt even if the rods are touched. But it is always best to be on the safe side, and not to use both hands together. Remember that a shock can be obtained in two ways—by touching two objects at different potential simultaneously, or by touching an object which is at a different potential than earth.

Add to your comfort and cosiness with these

CARAVAN FITTINGS

READERS who have built for themselves one of the caravans described in a previous number of Hobbies, or, perhaps, have bought one ready made, will probably find the fittings to be described most useful. The first item is a folding table and cupboard combined.

Figs. 1 and 2 show a side and front view of this arrangement, and the small space it occupies when folded up. It is of simple construction, and can be made from deal, say, $\frac{5}{8}$in. thickness. Nothing too heavy is desirable, owing to the necessity of avoiding weight. Sizes and dimensions given will be found about right but, of course, can be amended to suit the shape of the caravan, if necessary.



Framework

Cut the sides and top board, also the two shelves. These shelves are housed in the sides, $\frac{1}{4}$in. deep, as at (A) and the tops of the sides similarly housed in the top board, as at (B). Take particular note that the middle shelf extends beyond the sides $\frac{5}{8}$in., the fall table resting upon it, when down. No back is provided to the cupboard part, the wall of the caravan taking its place to economise wood.

It may be necessary here to cut away notches in the rear edges of side and top board, to clear the framing of the caravan. This will be seen at once, when fitting it in position.

The fall table will need two boards glued together to make up the width. At each end of this, glue and nail a $1\frac{1}{2}$in. wide batten, underneath, to prevent warping. Hinge the table to the top board with 2in. backflap hinges, placed about 10ins. from each end. To support the table, when in the 'up' position, cut and fix a wood bracket each side, as shown at (C). These might be cut from thicker wood than the rest, say, $\frac{7}{8}$in. stuff.

The Door

They are hinged to the sides with 3in. iron butt hinges, about 1in. back from the front edges of the cupboard sides. It will be seen that notches must be cut out of these, as seen at (D) in Fig. 2, to clear the hinges of the table.

The whole arrangement is now provided with a door for the lower half of the cupboard (the table itself providing the door for the upper half) and a wood edging to ends and front of the top board to prevent articles being shaken off during travel.

White enamel the fitting, and screw it to the front of the caravan, just below the window. A small metal button, screwed to the middle shelf, will keep the table from flapping, when in the down position. A similar button would suffice to keep the door fastened as well.

The second fitting is the provision of a couple of bed frames, as sleeping on the floor is not to be recommended on account of draughts. Both these frames are capable of being lifted out, a necessary arrangement where the door of the caravan is to one side. Fig. 3 shows one of the frames. Make up from good quality timber of $1\frac{1}{4}$ins. by $2\frac{1}{8}$ins. section.

TIMBER FOR MAKING

For table—one 12ft. and one 6ft. board of $\frac{5}{8}$in. by 8in. deal
For bed frames (4)—$1\frac{1}{4}$ins. by $2\frac{1}{8}$ins. by 6ft. 3ins.
For bed frames (2)—$1\frac{1}{4}$ins. by $2\frac{1}{8}$ins. by 2ft.
For bed frames (2)—$1\frac{1}{4}$ins. by $2\frac{1}{8}$ins. by 2ft. $2\frac{1}{8}$ins.
Legs (4)—2ins. by 2ins. by 1ft.

The corner joints are rebated ones, as in detail (E), strengthened inside the angles with triangular blocks, as shown. In the middle, screw across a stiffening bar, as at (F).

Frame Fitting

The second frame should be similarly made, but is just $2\frac{1}{8}$ins. wider, for reasons mentioned later on. The legs (G) Fig. 4, are cut from 2in. wood, and cut away at the top where they are screwed to the frames. Fix these legs, approximately where shown in the view at Fig. 3.

For fixing the frames to the walls of the caravan, simple metal fittings are suggested, made from $\frac{1}{8}$in. by 1in. iron bar. These are shown at (H) Fig. 4. Three will be needed for each frame, screwed to the rear of each, and the sockets screwed to the walls of the caravan at the right height.

It will be seen that the removal of either from their position is just a matter of lifting up free

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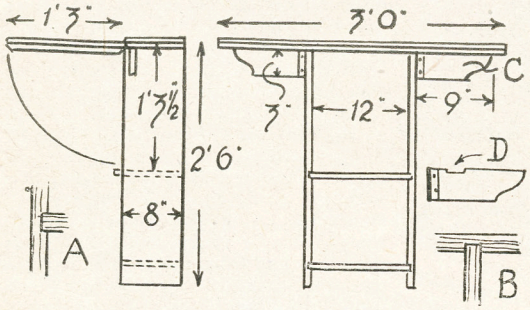


Fig. 1—End view with flap top

Fig. 2—Front view and detail of shelf joints

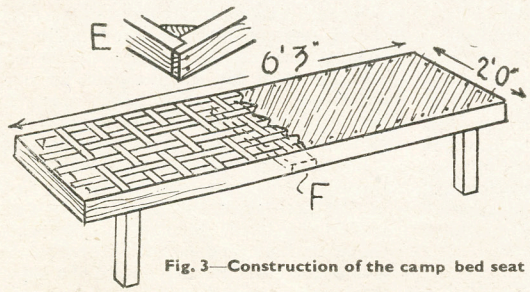


Fig. 3—Construction of the camp bed seat

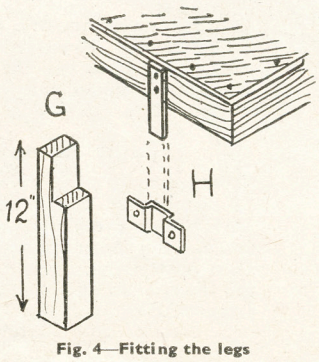


Fig. 4—Fitting the legs

For general use or for camping you should know about

CORDS AND ROPES

IT is safe to say that a good number of readers will be spending some of the summer under canvas and be trying out a little pioneering. Both in ordinary camping and pioneer work ropes and cords play an important part, so let us consider a few points about them.

Strong as they are these useful lengths are but made up of many fine fibres twisted together, generally fibres of sisal or manilla hemp, although cotton is often used. Starting at the beginning, 'yarn' is made by twisting fibres loosely together. 'Thread' is the result of twisting together several thin yarns. 'String' is the same, but using larger yarns. Several 'threads' twisted together form cords, while two or more large yarns form a strand and a number of strands twisted together make a rope.

Hold a rope up and the spiral of the twist usually runs from the bottom left-hand side to the top right-hand. The twisting of the strands together is known as the 'lay' and in the kind just mentioned has a right-handed lay. Cords and thin ropes can have a left-hand lay, or be plaited, when the word 'lay' does not apply. Three strands laid up together, right-handed, form what is known as 'hawser-laid rope'.

Measurements and Yarns

Ropes and cords are measured by their circumference, not diameter. Anything less than 1in. circumference is known as cord, above that the name rope is generally applied, but there is some looseness in the matter.

Below the 1in., this circumference way of describing ceases, the material then being classed by the number of yarns, i.e., six, nine, twelve, etc.

In the making of anything from string to a ship's cable the main aim is to make the fibres take the tension equally, and anything which prevents this detracts from the strength. Thus we see why kinks should always be taken out of cordage, as they put more strain on one side than the other.

For Strength

New ropes often are full of bends, but these can be got out by dragging them backwards and forwards over the ground. This helps the strands to fall easily and without stress into their natural lay.

As equal tension is necessary for maximum strength, it is not hard to see that knots, etc., cause weakness, as they distribute the load over the fibres unequally. Thus it has been calculated that the ordinary reef knot weakens a cord or rope by 50 per cent.

All cordage should be kept as dry as possible and never be put away damp, as it mildews quickly, which causes rot to set in. Wet cordage should be laid in the shade to dry or be hung up under cover and not coiled till it is quite dry.

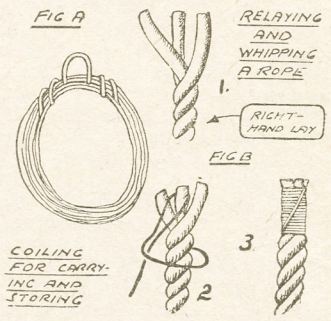
To Make Pliable

New cords and thin ropes are often stiff and unyielding. This trouble can be overcome by placing in water which is brought to the boil, after which they are laid out to dry. The 'boiling' makes them soft and pliable.

Ropes should always be coiled in their lay. Thus, right-handed material must be coiled clockwise, while 'cable-laid' rope, which has a left-handed twist, should be coiled in an anti-clockwise direction.

When coiling, drag the length straight out on the ground. Then stand with your back to it and bring the rope round in front from the right, dropping it at your feet in a not too large circle as you do so. Drop coil upon coil with an easy action, which will allow the rope to take a comfortable unstrained position. When finished, bind the coils together at three points on the circle with some small diameter material, using a readily unfastened knot of the slip type.

Short lengths of cordage can be



wound by twisting over the outstretched thumb and elbow. Run the free hand down the cord before making a coil, as this helps to shake it into its right 'lay'.

To secure the coils, pull out an inside turn, take it over the complete bundle and push through the middle of the turns. This holds everything quite tight and also gives a loop to hang by (see Fig. A).

Frayed Ends

After using for some time a rope often becomes untwisted at the end. Then it needs relaying and whipping. To do this, separate the strands and taking one at a time, twist the fibres tightly back into position as (1).

Then take the strands and twist these back to their natural lay. Now take the whipping material—'sailmakers yarn' is good, but strong thread is all right for thin cordage—and putting an end between the strands as (2), bind tightly with the turns close up together (3). Finish by giving the binder a twist round a single strand and getting out the other end from the strands, make a tight reef knot. Finally, cut neatly the tops of the strands beyond the whipping.

For Entertainment

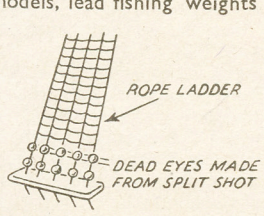
Ropes and cords are interesting things beyond their use for guylines, lashings and the like. Rope spinning for entertainment can become quite an art, an accomplished artist being able to make a rope act almost like a live thing in the air and form gyrating circles as solid as though made of bands of steel, through which he can jump with the utmost accuracy. The lariat is too well known to need description, but the things that can be done with it give some idea of the tremendous control of a rope that can be secured.

Puncture Mending

WHEN repairing inner-tube punctures, if you find that you have no french chalk, try a little starch, as this will answer your purpose very well.

Deadeyes

WHEN making small scale ship models, lead fishing weights make



excellent deadeyes if nipped neatly on to the rigging. They are quite cheap to purchase, and are known as split shot.

Screws In Hard Wood

TO prevent screws splitting hard or thin wood, file a flat on one side of a screw, and use it to cut a thread in the wood. Then remove and replace with an ordinary screw of the same size.

Stamp Hint

STAMP collectors who wish to keep the stamps clean should cut out pieces of Cellophane the size of the pages of the album, and when a page is full, stick it on.

Paint Remover

TO remove paint from doors, furniture, etc., take 1 oz. of common washing soda and ½ pint water. Mix the two and add soda until a jelly is formed. Then put on the article to be treated, and leave for half an hour before wiping away.

Now is the season to watch for and eradicate

WORM IN WOOD

MANY readers are acquainted to their cost with the destructive effects of the woodworm, and have wondered, perhaps, what kind of insect it is that can penetrate even the hardest wood with such apparent ease.

The months round July are when they are most evident and some notes on the subject will be interesting and helpful.

The trouble begins with the wood beetle, quite a tiny insect, about $\frac{3}{16}$in. long. This can often be seen walking up the window pane, and when noticed is a timely reminder to examine the surrounding woodwork. Small as the beetle is, its powerful jaws enable it to bore into wood, mainly it would seem to find a place in which it can deposit its eggs. Beech, strangely enough, is its favourite wood, but spruce, oak, elm and walnut may all be welcome to this destructive pest.

The Life Cycle

Once securely housed in the wood of its choice, the beetle lays its eggs and these, in time turn into small maggots, $\frac{3}{8}$in. long and half curled. The maggot is lazy in its habits, and lives entirely on the wood, tunnelling its way in every direction, with dire results to the furniture housing it. Its destructive effect is astonishing, as it can, and often does, reduce the whole interior of the wood to the consistency of powder.

The writer quite recently noticed a piece of furniture having a foot apparently fallen off. On closer examination, the foot, a 4in. diameter one of beech, was literally but a shell, filled with a brown powder, and had dropped to pieces. The other feet were also affected, though not so badly, but strange to say, the body of the article made of deal and walnut was uninjured.

The maggots in due time change into beetles. Then they emerge, and quite possibly attack something else. Though slow in movement, they can fly, having tiny wings concealed in wing cases on their bodies. The presence of both beetles and maggots can always be detected, both by the round entrance holes they make in the wood, and the little pile of whitish powdered wood just outside the holes.

Least Affected Wood

Mahogany and birch rarely seem affected by the pests, possibly they cannot stand the flavour, or there may be some deterrent in the timbers which render them obnoxious to them. Ash, also is rarely affected, and it may be valuable to woodworkers to remember these facts when choosing a wood for their work. Pine and American whitewood are almost immune, also cedar, rosewood, ebony and satinwood, though there is not much of these timbers available to the amateur cabinet maker now.

The articles of furniture most attacked seem to be those enjoying a more or less static existence. Chairs and tables, and such like pieces, frequently in use, and subject to much dusting and polishing, are not troubled with the pest nearly so much. Quite likely the woodworm hates disturbance. It certainly is no lover of polishes and beeswax treatment, and while such treatment may not render them absolutely immune, it certainly acts as a deterrent.

Precautions

Furniture, if not affected too badly, can sometimes be cured by a thorough dusting and frequent beating of its upholstery. Such disturbance is strongly resented by the beetles, who may well quit their holes for a quieter life in something else. Once the presence of woodworm is noticed, a close examination at frequent intervals of the furniture is a valuable precautionary measure, for, as just stated, the beetles may attack elsewhere.

Where a number of pieces of furniture are affected, the quickest remedy is fumigation with sulphur, but such a messy business is unnecessary when only few articles are attacked. One method is to squirt petrol in the holes, a job to be done in the open air, if possible, and no smoking on it.

Woodworms hate this, and emerge in a hurry when they can be killed. But patience is needed, as several applications may be required, and though the worms hurry out, it must be remembered that they are slow moving insects and take time to reach the outlets. When there are a lot of holes to receive attention, the job may well prove a long and tedious one.

What is considered a good, perhaps, the best of the home remedies, is a camphorated oil. Ordinary paraffin oil is the kind used, and a block of camphor should be crushed and dissolved in a small bottle of the oil. This, squirted in the holes with a fountain pen filler or oilcan, is fatal to the worms, provided it can reach them.

It is a capital remedy, at least in the early stages of the attack, but usually needs to be repeated at intervals of about a month for, say, 6 months period. The oil slowly evaporates, so leaves no mess behind.

Proprietory Remedies

There are several proprietary remedies on the market, which readers, unfortunate enough to suffer from the worms' ravages may employ if they wish. These can be bought at any oilshop or hardware stores, and save trouble making up at home. Among these may be mentioned the products named Cuprinol and Renticol, quite effective it is stated for the job.

Once the pest has been eradicated, the damage done to the furniture can be, if not repaired, at least hidden from view. Plastic wood, which can be bought coloured to match fancy woods, is a good material. The unsightly holes can be filled up with this substance, and if the wood is repolished or varnished, may well render them practically invisible. Putty, coloured with dry colours, to match the article of furniture, could also be employed where the number of holes is excessive.

Caravan Fittings—(*Continued from page* 149)

from the sockets. Give the frames a coat or two of varnish or paint, as preferred.

Both should now be well webbed, three strands lengthwise, and as many crosswise as necessary to leave them some 5ins. apart. Strain the webbing to the utmost, as it has to bear the weight of the body. A simple strainer can be bought or made up, as previously described in upholstery articles.

Over this a stout close woven canvas should be drawn taut and well tacked down. This should provide a sufficiently strong foundation for a sleeping bag o the conventional bed clothing.

If something a little softer is desired for a night's rest, and the extra expense not objected to, a little padding could be added. Flock would serve for this, an even layer of 1in. thickness being laid over the canvas and covered with American cloth or tapestry. This should, preferably, be buttoned, to keep the padding in its place and from becoming lumpy.

It may be added that tapestry is much warmer for sleeping on then the American cloth, but not so easy to keep clean. The material is pulled over the sides of the frames and there tacked, or tacked underneath where the tacks are hidden from view.

In the day time, one bed frame is lifted out, for access to the doorway. and is laid upon the other, the two together forming a comfortable lounge. This is the reason for making one frame wider than the other, the wider one resting on the narrow one, its extra width allowing the legs to clear it.

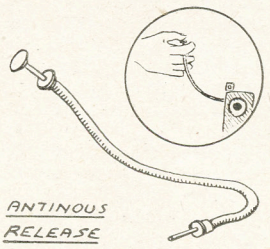
PHOTOGRAPHIC ALPHABET

This is the first of a series of articles which will give you, under the letters of the alphabet, quite a lot of information about photography. Indeed, the series will form almost a glossary to which you will be able to refer for guidance. If read carefully, article by article, the beginner, particularly, will find that he has gained a really good and wide knowledge of his hobby. Putting on one side then the fact that 'A' stands for yourself—the Amateur—let us get right on with the items that fall under the first of our everyday twenty-six.

A for—

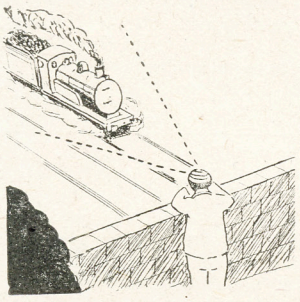
ANTINOUS RELEASE

MOST pictures are taken by pressing a trigger, but some cameras can be fitted with what looks like a piece of electric flex with a press-button on top. This is an antinous release and it allows you to stand well away from the camera, which is placed on something firm, while the exposure is made by pressing the top of the release. This quite cuts out the great danger of shaking the camera which comes when pushing down a trigger. A cable release of this sort also helps when holding the camera in the hand for by working the cable, all jabbing action is eliminated.



ACTION PHOTOGRAPHS

THIS is the name given to a class of very interesting photographs where the subjects have been in motion when the trigger was pressed—not stationary as is usually the case. With this type of picture the exposure must be instantaneous, the faster it is the better. The shutters found on 'box' cameras and other less expensive instruments work at about $\frac{1}{30}$ second, which will only arrest very slow movements. For sports, train pictures, motor races, etc., a faster speed is desirable, but much can be done with a slow shutter by choosing



the right position from which to take, the very best position being with the subject coming almost straight towards you. Here the exposure need only be one third of that required with the subject going right across the field of vision to get the same sharpness.

For very exacting action pictures, press photographers use shutters which will give exposures of $\frac{1}{1000}$ second and less and to get those amazing pictures of bubbles bursting that you see in the papers occasionally, special lamps which give exposures hundreds of time less still are used. Action pictures are a very interesting study.

ALBUMS

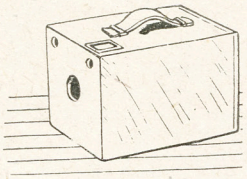
THESE can be bought in a wide variety of types. There are albums with loose leaves, fixed leaves, slotted leaves where you just slip the prints in and double leaves where the prints go between what is virtually two leaves and appear through an opening in one. On the whole for the ambitious amateur the loose leaf album is the best for this can be added to when more prints come along. The pages can also be taken out and rearranged if desired, or a spoilt leaf discarded without ruining the whole book.

With plain leaf albums (not slotted) it is best to put the prints in with gum stamps. These are small squares of paper with gum on both sides. They are stuck to the four corners of the print, and after being dampened again, the prints are just placed in the desired positions and pressed down. When in the album the stamps are quite invisible.

B for—

BOX CAMERA

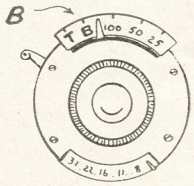
THIS type of camera, as the name suggests, is made just like a box with the lens at one end (with the shutter) and the film at the other. It will not fold up as other kinds do but it has quite a lot of advantages for the beginner. Normally inexpensive, the 'box camera' will stand up to a lot of rough treatment. Focusing is generally 'fixed' so you do not have to worry about this, while the shutter is of the simplest. Cameras of this type are easy to hold and take very bright little snaps. They have one big advantage over the folding camera in that the danger of stray light is practically non-existent. Bellows much easier become faulty and cause fog, through the leather deteriorating and developing minute holes.



Bulk is usually the only trouble with the box camera, though some very small and compact ones are made now-a-days.

BULB

ON the front of many cameras are three letters 'I', 'B' and 'T'. The 'I' means 'instantaneous' and here the shutter just flashes across the lens when you press the trigger, giving an exposure of about $\frac{1}{25}$th second. 'T' stands for 'time' and in this case when the pointer is set at this and the trigger pressed, the shutter remains open until the trigger is released, that is allowed to come up again. The 'B' stands for 'BULB' and here you press the trigger and the shutter opens and remains open till *the trigger is pressed again*. This fitting allows of the taking of a very long time exposure, as, say, in a dark church, when you may have to leave the camera standing for three or four minutes. With 'T' you would have to keep your finger on the trigger, but with 'B' you can press down and then move right away and so eliminate all danger of shaking the instrument. The only thing is you have to be sure that the camera is on something very rigid.



BACKING PAPER

THIS is the name given to the long strip of paper that goes at the back of a film and in which the sensitised length of celluloid (which is the film proper) is tightly wrapped. The paper is of especially fine-grain material and is absolutely opaque. On the outer side are a whole series of numbers and dividing marks which appear through the red inspection window at the back of the camera. The standard $3\frac{1}{4}$ins. by $2\frac{1}{4}$ins. film is generally marked to give eight exposures of $3\frac{1}{4}$ins. by $2\frac{1}{4}$ins., twelve of $2\frac{1}{4}$ins. by $2\frac{1}{4}$ins. or sixteen of $2\frac{1}{4}$ins. by $1\frac{5}{8}$ins. So the backing paper allows of the sensitised strip being used on several different cameras.

Backing paper for ordinary film is red in colour but that used for panchromatic material (sensitive to reds) is finished in green. Both are black on the inside.

When the seal on the backing paper has been broken to put a film in the camera, the roll must be held between the fingers to prevent it uncoiling and causing fog. Similarly, when taking a roll out, the backing paper must be wrapped quite tightly before licking down the gummy tab.

Some more Simple Home-made Cements

Quick-setting Iron Cement

IRON borings or filings powdered, 2½lb. powdered sal ammoniac, 1oz. sulphur (in block or flowers), ½oz., together with enough water to moisten the mixture; forms quickly-hardening iron cement. It sets more firmly without the sulphur, and must be used just as soon as mixed, and should be well caulked into the joint or gap in the casting being treated.

Coppersmiths' Cement

POWDERED quicklime mixed with thinned gelatine or glue is used for cementing copper articles without heat.

Dental Cements

THESE are very hard cements used for stopping the cavities of teeth, but will find many ready uses where waterproof fillings are required in which no surface wear takes place. They are mostly composed of various gums and resins in differing proportions, and only the more important ones are noted.

Formula No. 1. Powdered gum sandarac and gum mastic in equal proportions mixed with enough alcohol to form a stiff paste, which must be quickly used.

Formula No. 2. 9 parts of powdered gum mastic solved in 4 parts of ether, and enough alum added to form a workable paste.

Formula No. 3. 12 parts of phosphoric acid crystals mixed with 13 parts of pulverized quick-lime. A rapidly-hardening cement.

Formula No. 4. (Silicious). This name is given to a mixture of equal parts of mastic, iron filings, ground kaolin and plaster of Paris.

Formula No. 5. (Metallic Amalgam cement). Melt 2 parts of tin with 1 part of cadmium, run it into sticks and file them to dust. Form the filings into an amalgam with mercury, and squeeze out any excess of quicksilver through a chamois-leather bag. Work up the plastic solid metal in the hands, when it is ready for pressing into the filling.

Cheap Paste for Scenic Modelling, etc.

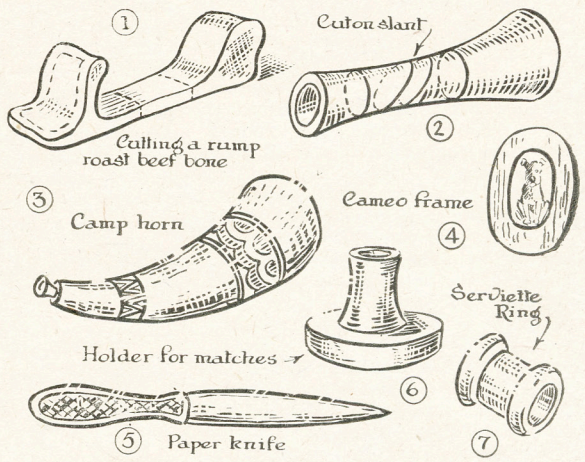
FOR relief and scenic model work a cheap paste which can be made in bulk can be produced by mixing together 4lbs. ordinary flour, 1lb. alum and 1 gallon of cold water, stirring to make a smooth creamy mass. Then boil 1½ gallons of water and, while boiling add the original mixture, stirring well all the time; and allowing it to continue boiling for five minutes. A teaspoonful of oil of cloves should be added to act as a preservative.

Whittling and carving can provide NOVELTIES IN BONE

THOUGH such wood as oak and such stone as marble are most suited to the carver's needs, many craftsmen have refused to be bound to convention, so that one occasionally meets with freakish media. We have seen carvings in coal, chalk, salt, etc., whilst soap sculpture is quite a recognised craft.

Whilst bone is not exactly an unknown medium for carving (since prehistoric men are known to have scratched patterns on bones) it is sufficiently novel to make a welcome change from wood and metal, whilst its ivory-like appearance is quite pleasing. Moreover, the material is cheap to obtain and easily worked, advantage being taken of natural forms.

Bones, from the smallest to the largest are used, though the most generally employed are large marrow bones from the shank of the animal. Apart from those obtained in one's own kitchen, a supply can be obtained from a butcher.



Novelties to Make

Readers may have seen, in shops selling novelty goods, grotesque figures of bow-legged men made from wish-bones; the bone forming the legs, whilst the body is modelled in plastic wood. One maker of these on a commercial scale obtains his bones from a well-known chicken-paste factory.

The bones have to be cleaned by boiling, to remove the fat, but care should be taken not to overdo this and remove all the natural oils, otherwise the bone may be brittle.

Certain parts will be obviously too porous to use, but the eye will soon perceive useful portions. In Figs. 1 and 2 one sees some methods of cutting bones whereby L-shapes and oval shapes (obtained by cutting on the slant) may, among other shapes, be obtained.

Tools Required

The tools to use are a hacksaw, rasp, files of varying coarseness, fretsaw, mallet and chisel, etc., whilst, for finishing, sandpaper of increasing fineness is used. A final polish is given by rubbing with powdered pumice (on a damp cloth), and then with a mixture of powdered chalk and olive oil.

For most purposes the bone is best left in its natural colour, but in some cases (such as when draughtsmen or chess pieces have been carved) it is necessary to colour the bone, and aniline dyes may be used.

In the illustrations, a few of the many possibilities of bone carving are shown. Other objects such as carved statuettes, chessmen, etc., can also be made. The cameo frame (4) is made by cutting a hollow bone on the slant, as already mentioned. The camp horn with carved decoration is made from a cow's horn and fitted with a ready-made metal bugle mouthpiece.

If carving in bone (or any other media for that matter) was undertaken on a commercial scale, a most useful tool to have would be a flexible drill like those used by dentists, and fitted with similar burrs. Larger articles can be fashioned either by jointing pieces together with dowels, much in the same way as wooden articles are assembled, or else by gluing together with cellulose cement or casein glue.

Prisoner Craftsmen

Among the old-time craftsmen in bone we must not forget the unfortunate Napoleonic prisoners-of-war who were sent to this country during the 21 years we were at war with France, from 1793 onwards. They were accommodated in special prisons, of which the one at Dartmoor still stands. There was also another at Norman Cross, near Yaxley, in Northampton.

These poor fellows had heaps of time on their hands, and displayed infinite patience over the work. The amateur craftsman finds more pleasure in the work.

Some of these unfortunate men, with the simplest of tools, carved bones from their meals into intricate models of ships, watch-stands and so on, which they sold, through their warders, in order to obtain a few 'extras' of food. Specimens of their work, and especially that from the Norman Cross prison, can be seen today in the Peterborough Museum. (150)

Here are some practical ideas and hints

FOR CAMP OR HIKE

A Simple Map Case

TAKE two sheets of stout strawboard, each about 8½ins. by 5ins. and join them, book fashion, with a hinge of stout linen. The cover of an old book trimmed to size might be made to serve. Slip the map into the cover, and hold it there with two strong elastic bands. A thin sheet of celluloid might be placed over each half of the opened map. This arrangement will keep the map flat, avoid 'dog-ears' and also hold the sheet open at the required section.

Keeps Feet Dry

MOST unprepared hikers have known what it is to sit around in bare feet whilst their only pair of stockings, which have got soaked in the rain, are drying before the fire. Slippers can easily be improvised from newspapers, as shown in the diagrams. The whole lot is held by the garter, or, better still, some string. The newspaper is quite warm and not so fragile as one might imagine.

Sheets of newspaper are arranged in a triangular form, as shown in Fig. 2. There should be two or three thicknesses. The front point is then brought up over the instep, as in Fig. 3, and finally the other two corners are brought over, giving the result as at Fig. 4.

Newspaper can also be stuffed up the legs of shorts and also packed into wet shoes to keep their shape.

Camp-Fire Stunt

LOW comedian enters with a plate of flour. 'What's this?' he asks another. 'Flour, of course', is the reply. 'Sure? Just taste it'. 'It's flour, I tell you'. 'Well, feel it then'. The other does so, and still maintains it's flour. 'Make sure by smelling it', says the man with the plate. The other bends down to smell it, and whilst his face is near the plate, the comedian blows all the flour in his face. In order to justify this, ethically, the 'straight' man should first have scored off the comedian so the affair is a tit-for-tat.

Sleeping Rough

'SLEEPING rough' may be either a Hobson's Choice or a Fine Art. Even the toughest outdoor men, thoroughly inured to hard living, cannot expect a good night's rest on hard flat ground with no groundsheet or blankets. Yet, with a little discrimination, one may sleep as soundly as a bug in a rug.

Though opinions may vary, the writer's choice is when tentless, for bedding down in a half-demolished haystack, getting tucked between the haystack wall and the loose hay around it. Sometimes a sheep hurdle can be found and leaned against the haystack. This is then covered with a foot or so of loose hay, making quite a water-tight bunk. Naturally, one should leave the haystack exactly as one found it.

Cold is the worst enemy of a 'rough' sleeper. Some summer nights can be very cold. Cowboys of fiction sleep around a fire, but, in actual fact, to gain any advantage, one has to be dangerously near the glowing embers. Reliance should be placed on a well arranged light blanket. Remember that more cold comes from below than from above, so have more bedding *under* you.

Many rough sleepers swear by a pile of small stones (sand is apt to be damp). After a little wriggling, the pile of stones conforms to the shape of the body. Take care, however, that your groundsheet is not torn.

Try Stencilling

STENCILLING, besides being a quick and useful means of decorating things, is very handy for marking personal, group or Boy Scout Troop property. Zinc stencil plates of patrol animals can be hired from the Scout Shop, and can be used to give your tents and other gear a distinctive mark.

A large stencil brush must be used, with bristles about 1in. long. It is a good plan to bind the bristles about half-way down with an elastic band, as this stops them splaying too much.

Most kinds of paint can be used—oil paint, poster colours and indian ink. Pour a little in an old saucer, and whatever you do, do not get the brush too wet, or you will spoil everything. It is a wise plan to practise on a spare piece of material first so that you get used to the peculiar stabbing motion required with the brush.

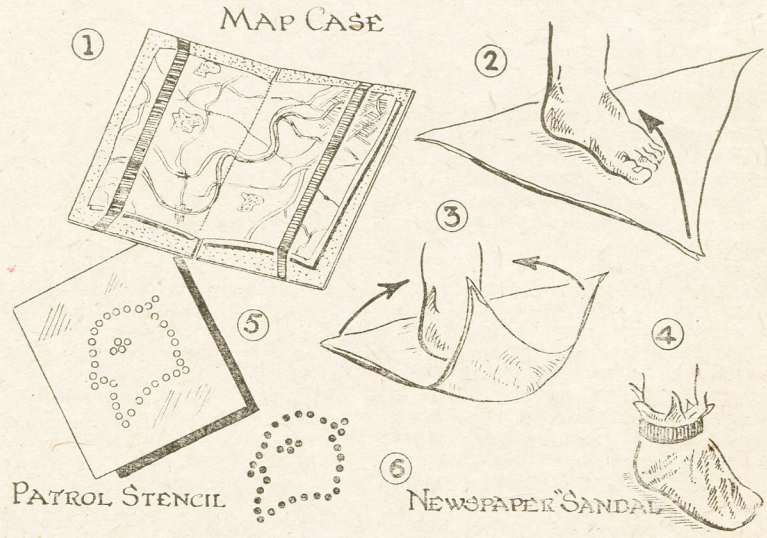
You can make your own stencil plates out of special paper sold for the purpose, or by using thin card and varnishing it well afterwards. Draw your design on the paper and black it in before you cut it out so that you can judge the effect of the finished design. Rest the paper on a sheet of glass and cut with a sharp penknife or a razor blade of the *Star* variety.

A much better plate is made of a thin sheet of metal, copper or zinc for preference. Anyone who can do ordinary fretwork should also be able to cut in metal. The metal is 'sandwiched' between two pieces of wood to stop it vibrating. The three layers are held by small nails driven through the waste parts of the design. A special metal-cutting blade must be used.

Here is a simpler method. Draw your Patrol animal, monogram, or what you will, using a bold outline. Then from an engineering friend or grown-up, borrow a ⅛in. diameter punch. This is an instrument which punches out a neat clean hole, leaving only a slight burr which must be smoothed off with a fine file.

Lay your sheet of metal on a flat piece of soft wood, and punch round the outline, leaving about ⅛in. between the edges of the holes, and there you have a fine stencil.

The same principle can be used in pricking out a design in a sheet of thin cardboard with a pin, and brushing over it like a stencil. The result, however, is not quite so good, owing to the roughness of the holes. (155)



The home carpenter should make for himself this

SIMPLE SMALL BUREAU

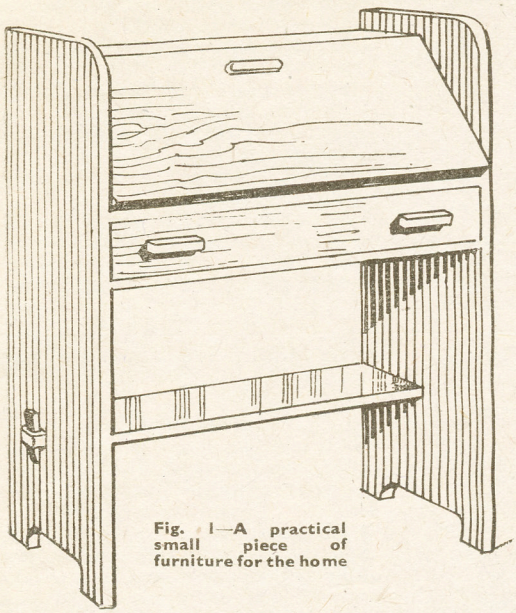


Fig. 1—A practical small piece of furniture for the home

WE give this week another piece of useful furniture for the amateur home carpenter to make. This bureau, pictured complete at Fig. 1, is of the simplest construction, with no mortise and tenon joints or complicated parts to worry about. It would look well made of oak, but almost any other wood could be used, with strict attention to the actual finish, whether it be stain or paint. With oak, of course, a light or a dark stain with a wax polish is a very simple and easily applied finish.

Wood $\frac{5}{8}$in. or $\frac{3}{4}$in. thick should be used for the main carcase of the bureau, with $\frac{1}{2}$in. stuff for certain parts of the drawer and $\frac{1}{4}$in. wood for the interior compartments. There is no need to describe the construction of the bureau in detail, because the front view and side view given in Fig. 2 show all the parts plainly.

In commencing to make it up we must get two boards for the ends measuring 41ins. long by 14ins. wide. Now, as the width of 14ins. is rather great to obtain in one width, we must plane up two pieces of 7in. stuff and make a thoroughly good glued joint for each end upright. Round off the front top corner of each upright, and cut in the shaped piece at the foot with the fretsaw to the measurement given.

A small mortise is next cut in each end upright measuring $2\frac{1}{4}$ins. long and $\frac{3}{4}$in. wide to receive the tenon on the end lower shelf, see side view Fig. 2. The position of the mortise needs carefully setting out and checking on each upright for height and back measurement.

There are three cross rails next to set out. It will be noted that two of them (A), and (B), have their ends housed into the uprights. These housings are to be $\frac{1}{4}$in. deep and run through the full width of the board. A tenon saw can, therefore, be used for cutting down, while a $\frac{1}{4}$in. chisel will be helpful for clearing away the unwanted wood between the two saw cuts. The housings for the narrow top rail or shelf (C) are cut in to a distance of $5\frac{1}{2}$ins. from the back edge of the uprights, the ends of the recesses, therefore, being cut down square with the chisel.

The above three members (A), (B) and (C) are all the same length, viz., $26\frac{1}{2}$ins., the width of (A) being 2ins. and (B) being $13\frac{3}{4}$ins., while (C) is $5\frac{1}{2}$ins. The extreme lower cross rail or shelf will be 30ins. long, its width 8ins. Mark off $1\frac{3}{4}$ins. from each end of the shelf and set out the projecting tenons and the square holes to take the keys. All this is shown in the detail Fig. 3.

Test the Joints

It should be stated that the front edge of top shelf (C) must be planed to a chamfer, as seen in Fig. 2, to allow the falling front to rest upon it at the right angle. Before actually gluing the various parts, test the shelves and their housings and the mortise and tenons of the lower shelf. Apply glue to the ends of the lower shelf and wedge up securely with the wedge-shaped keys.

Then run in the upper shelves (B) and (C), applying the glue to the recesses. Countersunk screws may be run in from the outside faces of the uprights into the shelves, the heads of the screws being filled afterwards with a mixture of glue and sawdust or plastic wood. Clean the surfaces afterwards with glasspaper, rubbing always in the direction of the grain of wood.

The middle rail (A), it will be noted from the diagram Fig. 4, is not a wide rail like its neighbour (B) above, but merely consists of a narrow board

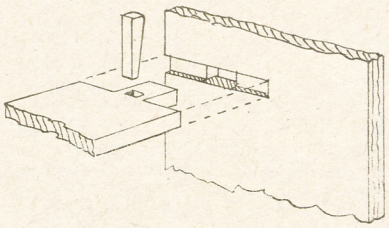


Fig. 3—Tenon and key joint detail

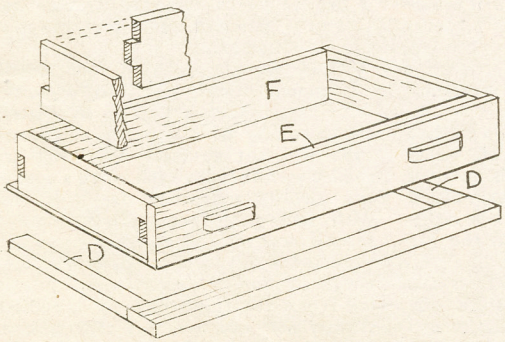


Fig. 4—Construction of drawer and framework

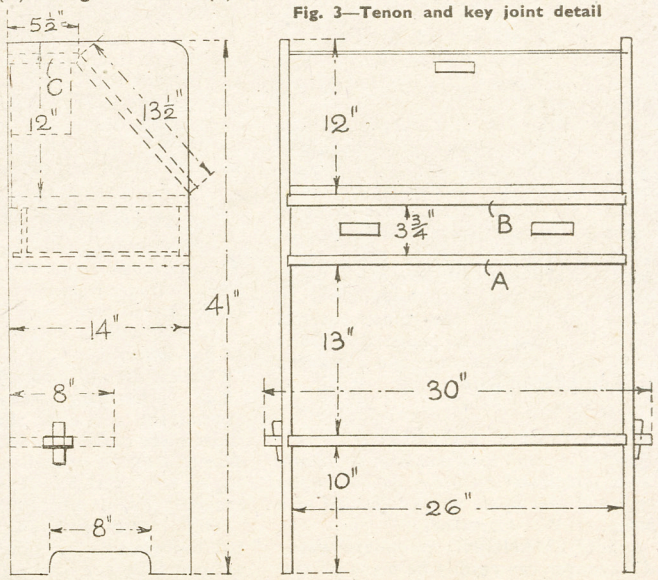


Fig. 2—Side and front view giving details and dimensions of parts

26½ins. long by 2ins. wide. When this has been fixed and glued in the housings, the two side runners (D) which might consist of a softer wood such as pine, are run in from the back and also in the housings and screwed similarly to the shelves.

The drawer is made as shown in Fig. 4. The front will be 26ins. long by 3¾ins. wide by ¾in. thick. The drawer sides are 12¼ins. long, 3⅜ins. wide and ½in. thick.

The inner front and the back, pieces (E) and (F) respectively, are 26ins. long by 3⅜ins. wide and ⅜in. thick. The four pieces forming, as it were, the inside frame of the drawer, are lapped together at the angles and glued up, as in the enlarged detail in Fig. 4.

The floor consists of either ¼in. plywood or ⅜in. plain wood made in two or more widths. Shaped blocks 3ins. long cut from ¾in. stuff will answer for the drawer pulls.

The falling leaf of the bureau measures 26ins. long by 13½ins. wide by ¾in. thick. This again might be made in two widths and carefully planed up and glued and cramped together. The top edges of the leaf must be planed to a chamfer to meet the edge of the top shelf. A pair of ordinary brass hinges should make a good connection to the rail.

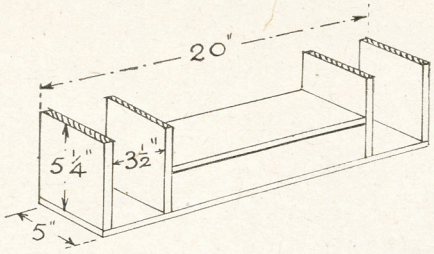


Fig. 5—Detail of interior partitions

The fitment to go inside the bureau may be made entirely from ¼in. wood to the outline given in Fig. 5. This fitment is screwed and glued to the main back of the bureau which consists of ¼in. or ⅜in. plywood measuring 26ins. by 12¾ins.

It is screwed to the back edge of rail (B) and to a small fillet glued along under the top shelf (C). Notches must be cut out of the fillet to allow the upright members of the fitment to be level with the main back.

When the bureau is wanted for use, the drawer is pulled out to about 6ins. to support the falling leaf upon which might be glued a card frame and blotter.

Framing Tapestry

PLEASE inform me of the correct way to frame tapestry. I find it difficult to get the material to lie flat. (W.G.D.—Aston-on-Trent).

ABOUT the best method to adopt is to first make a deal frame of ⅜in. by 1in. wood, the size of the tapestry, and on this stretch a covering of black calico or lining, or other strong material. This must be tacked to the back and be quite taut. To the lining, the tapestry is pressed flat, and kept there with a few inconspicuous stitches of black silk. Be careful not to distort the tapestry while pulling it out and tacking down. An outer frame of any narrow black or gold picture frame moulding will suit admirably.

* * *

Frosted Light Bulbs

COULD I frost a flashlight bulb for use in a photographer's printing-box? (J.L.—Milford-on-Sea).

A VARNISH for your purpose can be made from a solution of celluloid, with powdered chalk or talcum. A little celluloid varnish would suit. You can make it up yourself in this way. Shake up together one part acetone and half part amyl acetate. In this, place some shredded celluloid and allow the latter to dissolve. Allow enough celluloid to make the varnish the consistency of paint, then add a small proportion of the chalk or talcum powder and paint the bulb of the light with it.

* * *

Water Circulator

I HAVE a small tank and wish to improve its circulation by using its own water over and over again without the aid of a pump. (H.W.—Hounslow).

A SELF-CHANGING pumpless water changer can readily be made on the syphon principle. This consists of a bent tube in the form of a U with one long and one short leg. The long leg is inserted in the tank nearly to the bottom, the short leg should terminate above the water level. To start the action, it is necessary to suck up the water from the short leg until the water commences to flow, after that it will continue indefinitely, or if it stops for any reason, can be restarted in the same way.

* * *

Heat Marks on Polish

I RECENTLY french polished a table top, but found that when anything hot was placed upon the surface, there was a nasty ring left on the table. What is the cause of this and the remedy? (W.F.—Newark-on-Trent).

FRENCH polish is subject to marking from contact with hot vessels, and is not a suitable finish for a dining table, or at least the top of it. We suggest you clean off the existing polish with methylated spirit, then coat the surface (top surface only, of course, not rails and legs), with TOTEM, a heat resisting lacquer.

* * *

Water-tight Glands

I AM attempting to make my first power-driven model boat. Where the propeller shaft protrudes from the propeller bearing, in the stern, there must surely be some leakage of water. How is this overcome? (K.B.—Salford).

THE easiest and most effective method of preventing leakage of water around the propeller shaft, is to fit a short piece of tube about four times the diameter of the propeller shaft at right-angles to the shaft. Then fill the gap around the shaft with Vaseline.

The piece of tube can be fixed to the hull to form a kind of pot, the stern tube extends from the hull into the after end of the 'pot' and thus there is a good oil or grease (Vaseline) seal to check the inflow of water.

* * *

Polarscope Glass

THE other day I made the toy polariser (Hobbies Weekly No. 2820) and find I can get no results with it at all. (E.G.B.—Bath).

THE failure of your polarscope to work is most likely due to the quality of the glass employed to make the prisms. Certain kinds of glass are useless. About the best is that obtained from old photograph negatives, another is the kind employed for microscope slides. The trouble you mentioned, we have experienced ourselves on making one from window glass—it was a failure. With better glass, no difficulty will be experienced.

* * *

Telescope Cleaning

I HAVE a telescope and some of the lenses are dull. Could you tell me of a way to improve them? (A.E.H.—Berkhamsted).

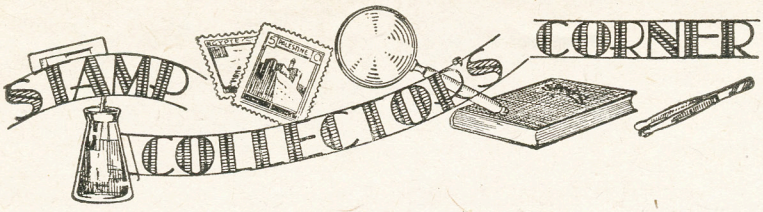
IN all probability the dull appearance of the lenses is due to fatigue and age; should this be the case, there is no cure. Possibly some of the dullness may be due to surface accumulations of grease and dirt. If this is so, the lenses can be cleaned by first washing in warm soapy water, rinsing in clean warm water. Dry carefully, then polish with a silk pad charged with polishing rouge.

* * *

Cement for Tin Foil

I HAVE some sheet tin foil which I should like to fix to three-ply. Could you suggest a glue that would stick the two? (J.L.H.—Maidstone).

YOU would probably find Bostik cement sticks metal to plywood, but if large sheets are to be so treated, the cost may be too much, as a small tube will not go far. Why not try shellac varnish? Give the wood a coat of the varnish, and when dry, rub over with fine glasspaper. Then apply a second coat of the varnish, press the tinfoil on and lay a board or box on top, weighted for a few hours. If the foil is not too thin, roughen its surface slightly with coarse emery cloth beforehand, to provide a 'key' for the varnish.



Centenaries of 1950

THOSE collectors who are fond of dates and anniversaries can have quite a 'field day' in 1950 or, should we say, many 'field days'. We can commemorate royalty, statesmen, authors, philosophers, discoverers and composers by seeing portraits of these on the stamps of about half a dozen different countries.

If we start with royalty then we should turn to the stamps of Newfoundland. Strictly, we should now call this country Canada, but as the royal portrait appeared on the stamps issued in 1911 when the island was a separate colony, one can be excused for using the name in force at the time it was issued. Had one said Canada and then quoted the date 1911, readers would never have found the stamp in their catalogues.

The 1911 issue was the Coronation issue — the commemoration of the coronation of King George V.—and it was on the 12c. that the portrait of The Duke of Connaught appeared. When it was first issued the stamp was only worth approximately 6d., but now it is worth about £2. May 1st is the centenary of the birth of the Duke of Connaught, who was the third son of Queen Victoria.

The Statesman — The Author — The French Philosopher — The Musician

Statesmen

Two statesmen whose centenaries are commemorated on stamps this year are Zachary Taylor and T. G. Masaryk. Zachary was the 12th President of the United States of America and he appears on the 12 cent of the President's set. He died on July 12th, 1850. He became President only in 1849, but earned for himself the title of 'Old Rough-and-Ready'. The Presidential set issued in 1938 of which this stamp is one is a remarkable example of engraving.

Many of the portraits are taken from famous paintings and some from statues, while a few come from coins or medals. Each stamp has the name of the President depicted, with the date he was President. These are arranged in chronological order, starting with the half cent which shows Benjamin Franklin.

T. G. Masaryk is the other statesman commemorated this year; he was born on March 7th, 1850. The illustration is of the stamp which was issued in 1935 on the occasion of Masaryk's 85th birthday. It shows his autograph and also the date of his birth.

Thomas Garrigue Masaryk was the first President of Czechoslovakia, the son of a coachman in the employ of the Austrian Imperial Family. He became a blacksmith, then studied at Vienna University and later lectured there. In 1882 he was made a professor in the Czech section of the Prague University. He entered the Czech Parliament in 1891, but two years later resigned. He went back in 1907 and attacked Austria and Hungary. In 1914 he went to the United States of America and in 1918 he became President of Czechoslovakia.

Literature

Literature has three centenaries to commemorate this year. Balzac and Pierre Loti are found on French stamps and Robert Louis Stevenson on the stamps of Western Samoa.

Honore de Balzac was born in 1799 and died in 1850. He was trained for the law but soon left this for writing. His early efforts were not very successful, neither was his first effort as the head of a printing firm. He fled into the country away from his debts, and it was while living in the country that he wrote his first successful work. Having started, he wrote with a vengeance—no less than 85 novels in 20 years! The detail in his work was a feature equalling that of Charles Dickens.

Pierre Loti was born the year that Balzac died. His real name was Louis Marie Julien Viaud—Pierre Loti being his pseudonym. His work is particularly noted for its excellent prose style.

Author

Robert Louis Stevenson was also born in 1850, a Scots author who, like Balzac, studied law before he took up writing. He also studied engineering but his ill health prevented his practising either.

One might almost say that we ought to be thankful for his ill health as an engineer. He might have done something of merit, but it is very doubtful if he would have been so well remembered as he is. He travelled widely in Europe and in 1899 went to the South Seas where he died in 1894.

Most boys will remember reading 'Treasure Island', 'Kidnapped' and 'Catriona', whilst grown-ups will remember him by his Dr. Jekyll and Mr. Hyde. He died in Samoa, and on the stamps of Western Samoa we have (on the 1935 set) a picture of his house on the 6d. value. His tomb is shown on the 1/- value, while the 1939 set of Samoa, which commemorates the 25th anniversary of New Zealand Control, gives, on the 7d. value, a portrait of Robert Louis Stevenson and is here reproduced.

Philosopher

Our philosopher is Rene Descartes and France celebrates the 300th anniversary of his death this year, for he was born in 1596. Stamp collectors will recall him chiefly by the stamp error that was issued in his honour in 1937. A stamp was issued showing a portrait and an open book. On the book appeared the words 'Discours sur la methode' but this was wrong, and was very soon corrected to the proper version 'Discours de la methode'.

This is an example of an error which everyone can have in their album, for both the error and the correct version are quite cheap. They cost only sixpence each for the unused, and half that for the used. But if you select the latter, then see you have copies that are cleanly postmarked, so that these do not hide the words.

Musician

Two hundred years ago Johann Sebastian Bach died at the age of 65. Left an orphan when he was ten he had already had lessons on the violin from his father and then his brother taught him the clavicord. All his interest was in music and as he had a very beautiful treble voice, it is not surprising that he was a chorister and then an organist.

He married his first wife in 1707 and the next year went to Weimar as Court organist and stayed for nine years. He lost his first wife in 1718 and married again in 1721. Two years later he went to Leipzig, where he stayed for 27 years and it was here that he composed most of his work. In 1749 he became totally blind, dying the following year at Leipzig. His fame is commemorated on the stamp as seen above.

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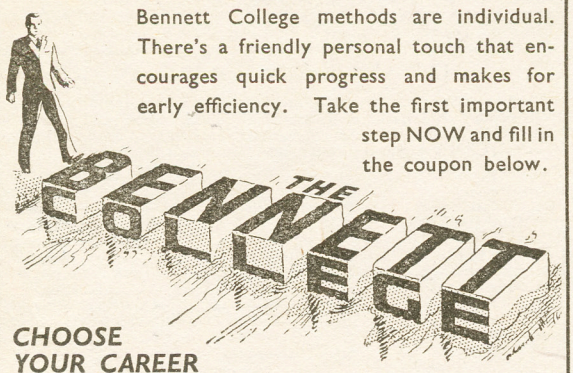

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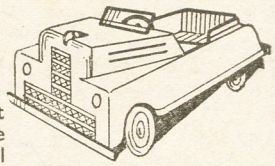

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